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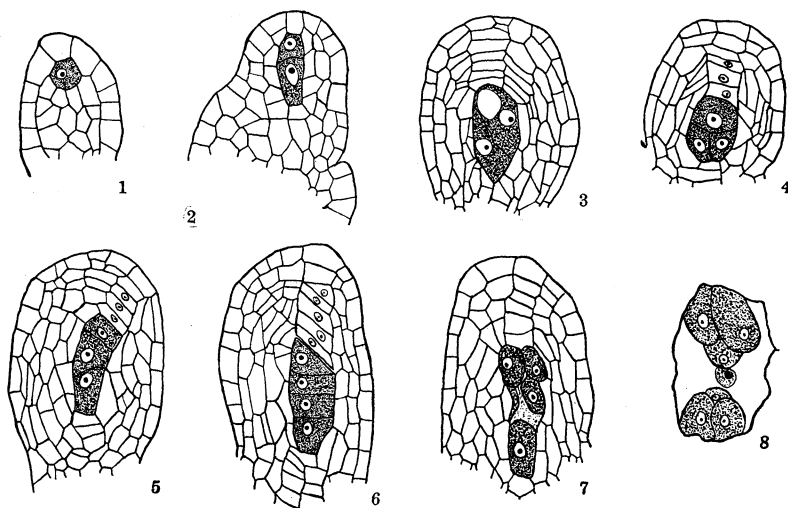
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## Development of the embryo-sac of *Hybanthus concolor*

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The embryo-sac of *Hybanthus concolor* (Forst.) Spreng. (*Cubelium concolor* Raf.) begins its development as an hypodermal cell. At first this cell is not different apparently from the other cells about it, but soon it becomes very grumous and is then easily distinguishable (FIG. 1).

The mother-cell of the embryo-sac next divides by a transverse wall into two cells unequal in size (FIG. 2). The terminal one of these two cells becomes somewhat more granular than the others and gives rise to the primary tapetal cell. By the rapid and nu-



FIGURES 1-8. Development of the embryo-sac of *Hybanthus concolor*. The figures are magnified 420 diameters. See text for explanations.

merous transverse divisions of this primary tapetal cell the embryo-sac when completely formed and sometimes even before maturity is covered by many layers of cells. Vertical as well as transverse divisions of the cells of the tapetal region also occur, so that frequently several quite regular rows of cells above the embryo-sac are produced (FIGS. 3, 4, 5, 6). Sometimes this regularity of these

divisions in the tapetal region is not shown. Instances were noticed where before and also after the formation of the primary tapetal cell the mother-cell of the embryo-sac divided longitudinally. These, however, in every instance divided into cells like those usually surrounding the embryo-sac mother-cell but were more granular.

The embryo-sac mother-cell divided first into two and then into four cells in the usual way. These divisions were often very irregular, as in some cases (FIG. 3) they were nearly vertical, and as shown by FIG. 4 were completely vertical after the first division.

The formation of the embryo-sac by the dissolution of these four cells generally begins with the lowest one of the tetrad and proceeds apically as regards the ovule through the other three. This is not always the case, for some instances were noticed in this same plant where the dissolution began with the next to the lowest cell of the tetrad as shown in FIG. 7. The embryo-sac, formed by the destruction of the tetrad as well as some of the surrounding cells, is very large.

The egg apparatus and antipodal cells in this plant are unusually large, as shown by FIG. 8. They frequently extend nearly across the embryo-sac lengthwise. The secondary nucleus was usually rather small.

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